

**Remarks/Arguments:**

Claims 1-6, 8, 9, 11 and 14-16 are pending in the application.

Claims 1, 2 and 8 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 2,592,523 ("Ayers") in view of U.S. Patent No. 4,011,882 ("Nivens"). Claims 3-6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ayers and Nivens and further in view of U.S. Patent No. 6,059,962 ("Alexander"). Claims 9, 11 and 14-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ayers and Nivens and further in view of EP 0 319 615 ("Duisters"). Applicants respectfully traverse the rejections and submit that the currently pending claims are patentable over these cited references for at least the reasons set forth below.

**Features of Independent Claim 1**

Applicants' invention, as recited in independent claim 1, includes features that are neither disclosed nor suggested by the cited references, namely:

A method of making a sulphided ion exchange resin containing primary or secondary amino groups and the concomitant **removal of elemental sulphur from a liquid hydrocarbon feedstock** comprising **passing said feedstock containing elemental sulphur through a bed of an ion exchange resin containing primary or secondary amino groups**, thereby forming a sulphided ion exchange resin containing primary or secondary amino groups (emphasis added).

**Response to Rejections**

The Office rejects independent claim 1 as obvious over Ayers in view of Nivens. The Office essentially asserts that Ayers discloses all of features of Applicants' invention as recited in claim 1, but concedes that Ayers "does not teach the removal of elemental sulphur from a liquid hydrocarbon feedstock." (Office Action, page 3). Applicants submit that Ayers also fails to disclose such removal of sulphur from a liquid hydrocarbon feedstock using an ion exchange resin. To supply the missing features, the Office cites to Nivens. Specifically, the Office asserts that Nivens "discloses the use of secondary aliphatic amines in a solution to remove elemental sulfur from a hydrocarbon fluid (see column 2, line 27 through column 3, line 29)." (Office Action, page 3).

Contrary to the Office's assertions, Applicants respectfully submit that the Office has misinterpreted the Nivens reference and that Nivens fails to disclose or suggest "removal of elemental sulphur from a liquid hydrocarbon feedstock," much less *passing said feedstock* (i.e. the hydrocarbon feedstock) containing elemental sulphur through a bed of ion exchange resin containing primary or secondary amino groups, as asserted by the Office.

More specifically, Nivens (col. 2, line 18 to col. 8, line 2) discloses a method for preventing sulphur contamination of "sweet" fluids (i.e. sulphur-free fluids) passed through a pipeline that previously has been used to transport "sour" fluids (i.e. fluids containing sulphur compounds), by using an intermediate "sweet" wash solution. The intermediate "sweet" wash solution contains, among other components, a corrosion inhibitor (being the reaction product of an amine and an organic hydroxy acid) and 10 to about 2000 ppm of a specific mixture of amines consisting essentially of light amines having a molecular weight from about 31 to 150 and heavy amines having a molecular weight from 1511 to about 500. In Nivens, the purpose of the wash solution is to remove any elemental sulphur and sulphur compounds, deposited from the sour fluid, from the internal surfaces of the pipeline before passing the "sweet" fluid through the pipeline. Thus, Applicants submit that Nivens does not "disclose the use of secondary aliphatic amines in a solution to remove elemental sulfur from a *hydrocarbon fluid*" as the Office alleges.

Applicants further submit that Nivens discloses nothing whatsoever about removing sulphur from a hydrocarbon fluid, let alone the use of secondary amines to remove sulphur from hydrocarbon fluid. Nor does the combination disclose passing the feedstock (i.e. liquid hydrocarbon feedstock) containing elemental sulphur through a bed of an ion exchange resin containing primary or secondary amino groups. "To establish a *prima facie* case of obviousness . . . the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. §2143. Here, a *prima facie* case of obviousness has not been established as neither Ayers nor Nivens either alone or in their combination, teach, disclose or suggest all of the features of Applicants' invention.

Moreover, Applicants submit that one of ordinary skill in the art would not be lead to combine Ayers with Nivens as there would be no reason based on the teachings of Ayers and Nivens to use secondary amines for removing elemental sulphur from hydrocarbon liquids as alleged by the Office. Applicants submit that the only teaching of Nivens is the use of a

complex wash solution containing a low concentration of certain amines to remove deposited sulphur from pipeline surfaces, such as iron surfaces.

Accordingly, Applicants submit that independent claim 1 is patentable over the combination of Ayers in view of Nivens. Furthermore, dependent claims 2 and 8 are also patentable over Ayers in view of Nivens for at least the reasons that claim 1 is patentable over this combination.

The Office rejects claims 3-6 as obvious over Ayers and Nivens and further in view of Alexander. The Office also rejects claims 9, 11 and 14-16 as obvious over Ayers and Nivens and further in view Duisters. For at least the reasons that the Office relies in part on the combination of Ayers and Nivens to reject claims 3-6, 9, 11 and 14-16, which are dependent on claim 1, and claim 1 is patentable over Ayers and Nivens, these dependent claims are also patentable over the combination of references including Ayers and Nivens.

## Conclusion

Applicants respectfully submit that because the Office has failed to establish a *prima facie* case of obviousness, the pending claims are patentable over the cited references, without amendment. The pending application is, therefore, in condition for allowance. Notice to this effect is earnestly solicited.

Respectfully submitted,



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